Nº 11,378 A.D. 1904

(*Under International Convention.*)

Date claimed for Patent under Patents Act, 1901, being date of first Foreign Application (in France), } 18th May, 1903

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Accepted, 17th May, 1905

COMPLETE SPECIFICATION.

"Improvements relating to Apparatus for Sterilising Liquids"

I, Charles Frédéric Victor Morel, of 4 Rue Monsieur, Paris in the Republic of France, Water Inspector, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This sterilising apparatus is based:

1. Upon the instability of the equilibrium of a descending column of liquid to be sterilised and of an ascending column of liquid submitted to ebullition, this instability being obtained by interposing bubbles of vapour in a tube of the ascending column, termed the suction appliance.

2. Upon the resistance offered to the discharge of the ascending liquid by the pressure exerted by the descending liquid upon a part with flexible walls traversed by the ascending water and termed the pulsating device.

The apparatus so constituted is automatic in its action and furnishes a continuous supply.

In the drawing, which is a vertical section through an apparatus established in accordance with the above principles, A is a cylindrical casing at the upper part of which is a tubular socket B for the admission of the liquid to be sterilised.

In the lower part of this casing A is engaged a part C forming a boiler, this boiler being formed by a metal block c around which is formed a helicoidal groove c^1, the lower part of which opens into a chamber c^2 formed by the base of the block c with the bottom of the casing A; beneath this chamber c^2 is arranged a furnace D or other suitable source of heat.

The chamber c^2 is prolonged by a passage c^3 which terminates in a suction tube E, which is provided externally with washers or wings e; this tube terminates in a chamber F the diameter of which is slightly less than that of the casing A; in this chamber F is engaged the lower extremity of an assemblage of recuperator tubes G, the interior of the tubes being furnished with suitably arranged metal rods. The upper extremity of this tubular assemblage G is engaged in a chamber H identical with the chamber F. The upper part of this chamber terminates in a tubular socket h; a tube i fixed to the upper part of the casing A in prolongation of the socket h conducts the sterilised liquid towards the outlet I.

The tubular socket h and the pipe i are connected by the intermediary of a pulsating device J constituted by two sheets of india rubber or of rubbered fabric connected at their edges.

A regulator K of any appropriate kind regulates the pressure in the apparatus

[*Price* 8*d*.]

by acting upon the valve *k* for the admission of the liquid to be sterilised; an aperture k^1 is adapted to place the apparatus in communication with the exterior. At the upper part of the casing A is arranged a valve L which may be operated by hand for the discharge of the gases which may be formed at the upper part of the apparatus.

OPERATION.

Assuming that the valve *k* is open and that the liquid to be sterilised fills the free space within the casing A, which thus forms the descending column; then that the boiler C and the recuperator G are likewise filled by this same liquid and form the ascending column; under these conditions the two columns of liquid are in equilibrium and the walls of the pulsating device J are applied one against the other by the external pressure and no flow takes place at the outlet I; this is the inoperative condition of the apparatus.

The apparatus being in this state, the furnace D is kindled, the liquid in the chamber c^2 becomes heated, liberating bubbles of vapour which rise and accumulate in the suction appliance E, the helicoidal groove c^1 serving to prevent the bubbles from proceeding towards the descending column; when the liquid begins to boil, the accumulation of bubbles of vapour in the suction device E forms a vacuum which disturbs the equilibrium in the ascending column, the two columns tending to resume their condition of stability, a circulation is produced which will be continuous so long as ebullition is produced in the chamber c^2, the presence of the bubbles of vapour in the suction appliance E forming suction for the descending column.

The liquid of the descending column circulates outside the assemblage of tubes G, where it commences to become heated, then reaches the wings *e* of the suction appliance E which retards its descent, in such a manner that the hottest portion of the liquid is situated at the bottom of the apparatus where it then reaches the boiler C around which it circulates in following the groove c^1 in order to reach the ebullition chamber c^2.

The sterilised liquid rises in the recuperator G enveloped by the liquid of the descending column, through which it yields up a great portion of its heat, then passes through the pulsation appliance J which it inflates, and reaches the outlet I.

The ebullition temperature required for the sterilisation of the liquid treated is determined by the pressure of the descending column; this pressure is itself determined by the aperture of the valve *k*, controlled by the pressure regulator K which is adjusted for this purpose.

If for any reason the pressure should become greater than that determined upon, the pressure regulator K would uncover the aperture k^1, which would result in placing the apparatus in communication with the exterior.

The apparatus represented by way of example in the accompanying drawing is purely diagrammatic, it may of course vary in its form and dimensions whilst at the same time retaining its essential features.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

Apparatus for sterilisation of liquids constructed arranged and combined and having its parts adapted to operate substantially as described with reference to the accompanying drawing and for the purpose specified.

Dated this 17th day of May, 1904.

HASELTINE, LAKE & Co.
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Agents for the Applicant.

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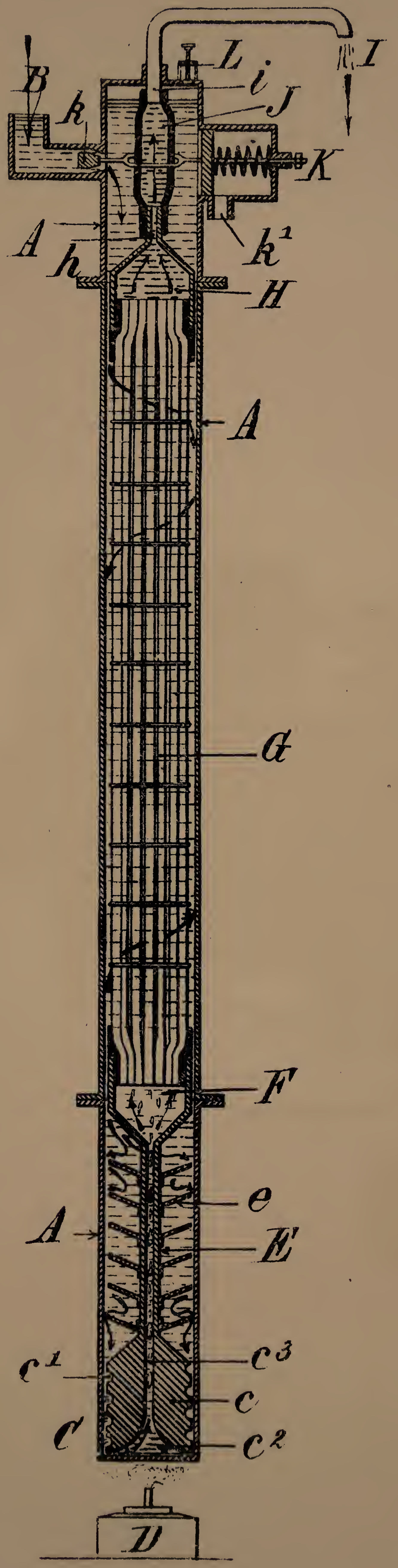
MOREL'S COMPLETE SPECIFICATION.

(1 SHEET)

[This Drawing is a reproduction of the Original on a reduced scale.]



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